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U.S. Students Gain in Science and Mathematics on International Assessment

No Change in PISA Reading Scores

The performance of U.S. 15-year-old students improved in science, gained ground in mathematics, and held steady in reading, according to the results of an international assessment released today by the National Center for Education Statistics in the U.S. Department of Education.

The report, *Highlights From PISA 2009: Performance of U. S. 15-Year-Old Students in Reading, Mathematics, and Science Literacy in an International Context*, compares the performance of U.S. 15-year-old students in reading, mathematics, and science literacy to the performance of their peers internationally. PISA, or the Program for International Student Assessment, is designed to assess what students have learned – both inside and outside of school – as they near the end of compulsory schooling, and how well they apply that knowledge in real-world contexts. Sixty-nine percent of the U.S. students sampled for PISA are tenth-graders. PISA is coordinated by the Organization of Economic Cooperation and Development (OECD), an intergovernmental organization of 34 member countries.

"These results are an important measure of how our 15-year-olds are performing compared to their peers internationally, especially because this assessment gauges applied literacy skills, which differ somewhat from the skills assessed on our national assessment," said John Easton, director of the Institute of Education Sciences, in which the National Center for Education Statistics operates.

In reading, the U.S. average score was 500, not measurably different from previous PISA assessments, or the OECD average score of 493. For science, the U.S. average score in 2009 was higher than the U.S. average score in 2006, the only time point to which PISA 2009 performance can be compared in science literacy. The gain means that the U.S. science performance is no longer below the OECD average. In mathematics, scores improved from 2006 but were not measurably different from scores on the 2003 assessment, and were still below the OECD average.

NCES Deputy Commissioner Stuart Kerachsky noted the different patterns in performance across the three subjects assessed.

"Relative to other countries, the United States is decidedly weaker in mathematics than in reading or even science, although there is evidence that the U.S. is making progress relative to similarly performing countries," he said.

Among the report's key findings:

READING LITERACY:

- Among the 33 other OECD countries, 6 had higher averages scores than the United States, 13 had lower average sores, and 14 had average scores not measurably different than the U.S. average; among all 64 other countries and education systems, 9 had higher average scores than the United States, 39 were lower, and 16 were not measurably different.
- Eighteen percent of U.S. students did not reach PISA's proficiency level 2, considered to be the point at which students can complete low-level reading tasks. Thirty percent scored at or above level 4, at which students are "capable of difficult reading tasks."
- Girls outperformed boys in reading literacy in all 65 participating countries and education systems. In the United States, girls scored 25 points higher than boys, one of the lowest gender differences across all PISA participants.

MATHEMATICS LITERACY:

- The U.S. average score, at 487, was lower than the OECD average score of 496.
- Among the 33 other OECD countries, 17 countries had higher average scores than the United States, 5 had lower, and 11 had average scores not measurably different from the U.S. average; among all 64 other countries and education systems, 23 had higher average scores than the United States, 29 had lower average scores, and 12 had average scores not measurably different from the U.S. average score.
- The U.S. average score in mathematics literacy in 2009 was higher than the U.S. average in 2006 but not measurably different from the U.S. average in 2003, the initial year for the same mathematics assessment.
- Twenty-three percent of U.S. students scored below level 2 in mathematics literacy, and 27 percent scored at or above level 4.
- In the United States, boys scored 20 points higher than girls in math literacy—497 compared to 477 points. The OECD average also was higher for male students (501) than female students (490). Boys averaged higher scores in 35 countries, while girls averaged higher scores in 5 countries.

SCIENCE LITERACY:

- U.S. 15-year-old students had an average score of 502 on the science literacy scale, which was not measurably different from the OECD average score of 501.

- By comparison, in 2006, the U.S. average score in science literacy was below the OECD average score.
- Among the 33 other OECD countries, 12 had higher average scores than the United States, 9 had lower average scores, and 12 had average scores not measurably different from the U.S. average; among all 64 other countries and education systems, 18 had higher average scores, 33 had lower average scores, and 13 had average scores that were not measurably different from the U.S. average score.
- The U.S. average score in science literacy in 2009 was higher than the U.S. average in 2006, the initial year for the same science assessment.
- Eighteen percent of U.S. students scored below level 2 in science literacy, and 29 percent scored at or above level 4.
- U.S. male students scored higher on average (509) than female students (495), but this gender gap did not exist when looking at the OECD average in science, where both girls and boys scored 501. Girls averaged higher scores in 21 countries, while boys averaged higher scores in 11 countries.

About PISA and OECD

PISA, first implemented in 2000, is an international assessment that measures the performance of 15-year-old students in reading literacy, mathematics literacy, and science literacy. PISA 2009 was the fourth cycle of the assessment. Target populations for PISA include all 15-year-olds in education institutions with grade 7 or higher, regardless of the type of education institution or whether it is publicly or privately funded. Students could be excluded for functional or intellectual disabilities or limited proficiency in the test language. The U.S. sample included both public and private schools, randomly selected and weighted to be representative of the nation's 15-year-old students. In total, 165 schools and 5,233 students participated in PISA 2009 in the United States.

The OECD is an intergovernmental organization made up of 34 mostly industrialized member countries like the United States, Japan, Germany, Korea, and the United Kingdom. Some non-OECD member countries, such as Brazil, as well as non-national education systems like Shanghai and Dubai, also participated in the administration of PISA 2009.